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HYDRO GEO CHEM, INC.

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Groundwater Consultants

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5 June 1981

MEMO TO: Ron Solimon, Pueblo of Laguna
Pat Wise, Pueblo of Laguna
Frank Jones, Bureau of Indian Affairs
Marc Nelson, U.S. Geological Survey

FROM: Hydro Geo Chem, Inc.

SUBJECT: Progress of work on Laguna Reservation; April
and May, 1981.

The draft report on work under Phase I of our study is complete. Six copies have been sent to the Tribal offices under separate cover for review and comment. The Tribe will handle distribution of the report to the U.S.G.S. and B.I.A.

Hydrogeology. Two field trips were made in May to collect water samples and observe flow at springs in the Salado Canyon and Rio Puerco areas.

On May 27 we walked about 3-4 miles along the Rio Puerco between sections 7 and 19 of T.12N., R.1W. Gulf had, at that time, apparently stopped discharging water into the drainages, as the entire reach was dry. In section 18 many seeps were noted at the point where the U.S.G.S. topo map shows the start of a perennial flow reach.

The discharge was on the order of a few gallons per minute. A much larger amount may be discharged to the river system as "underflow", suggested to us by the cold, wet channel some distance downstream of the seeps. Temperature of the water in the seeps is 15.5° C; specific conductivity, 6400 umhos; pH, 7.37. Samples were taken for lab analysis. The coolness of the seep water precludes the possibility that this water is just re-surfacing underflow due to shallow bedrock.



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Springs in the Salado Canyon and Canon del Piojo were visited. The only one flowing (10-20 gpm) was at La Gotera, from the Jackpile sandstone. Water quality (Temp.=14.0° C, specific conductance less than 2190 umhos) was better than streamflow in the Salado Creek. Springs in Canon del Piojo (at outcrops of Jackpile and Brushy Basin) were dry though there was ponded water near them.

A sample of water was drawn from the flowing Conoco well (T.12N., R.1W., sec. 31) for carbon-14 analysis. Attempts were made to sample a Jackpile well on the Anaconda lease, but Anaconda officials required additional clarification before allowing us access to the well. We will write a letter of explanation to them and hopefully sample later this summer.

Monitoring Program. A memo was sent to Les Taylor and Peter Balleau outlining our interpretation of the pollution problem. We have received their comments and are formulating final recommendations for a monitoring program.

The tracing test was also discussed. Several options were given to us by Peter Balleau and we are presently assessing them.

Numerical Modeling. Modifications necessary to execute the U.S.G.S. three-dimensional model on the Sun Information Systems Cyber computer have been computed. Data for the 5-layer steady state model are being coded for entry into the model. The steady state model will be calibrated based on the potentiometric surface maps of the various aquifers and the estimates of boundary fluxes presented in the Phase I report.